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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,029	12/11/2003	Haewon Uhm	FDN-2821	8739

7590 01/08/2007  
Attn: William J. Davis, Esq.  
GAF MATERIALS CORPORATION  
Legal Department, Building No. 10  
1361 Alps Road  
Wayne, NJ 07470

EXAMINER
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CORDRAY, DENNIS R

ART UNIT	PAPER NUMBER
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1731

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/08/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/734,029	UHM ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Dennis Cordray	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10/10/2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Arguments*

Applicant's amendments filed 10/10/2006 have overcome the rejection of Claims 1-6 and 9-18 under 35 U.S.C. 103(a) as being unpatentable over Mirous in view of Sage. Neither reference teaches that the individual sized glass fibers are dried as they move on an endless moving conveyor. The rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made as detailed below.

In regard to Jaffee et al, Applicant argues on p 7 that the wet glass fiber mat is dewatered in a suction box 29 and then transferred to a moving screen for application of a binder solution. Jaffee et al forms the mat by collecting fibers from a fibrous slurry on an inclined moving permeable belt, the preferred process using known mat forming machines like the Hydroformer™ or Deltaformer™ (col 4, lines 5-16). The wet glass fiber mat is dewatered in a suction box 29 and then transferred to a second moving screen for application of a binder solution. Thus the fibers forming the mat on the first moving screen are individual fibers, not yet having passed through the application of the binder and curing steps. The process is a continuous process, as shown in Figure 1, wherein the suction box 29 is depicted under the first moving screen. Two additional suction boxes 39 and 41 (Figs 1 and 2) are also shown under the second moving screen following the binder application. It would have been obvious to one of ordinary skill in the art that the dewatering process following collection of fibers on the first moving screen is conducted while the fibers are carried on the screen (moving on the conveyor).

To further support that the dewatering of Jaffee et al is accomplished while the fibers are moving on the screen, detailed schematics and descriptions of both the Hydroformer™ (<http://www.hydroformer.com/>) and the Deltaformer™ (<http://web.archive.org/web/20020609105744/http://gfinterweb.com/deltaformer.html>) are enclosed with this Office Action.

The description of the Hydroformer™ states that the process is derived from the papermaking process and includes "continuous formation of nonwovens on an inclined wire by means of filtration" and "solidification, drying and reeling of the formed nonwovens". Again, the process of formation and reeling are obviously continuous, and it would have been obvious to one of ordinary skill in the art that the drying is also continuous (i.e.-also on the moving forming wire). Somewhat more detail is provided with the Deltaformer™, which states "Machine speeds up to 600 m/min" and "a vacuum forming box with multiple compartments". The upper schematic diagram shows the vacuum forming box located under the continuous moving forming wire, clearly indicating that drying occurs while the collected fibers travel on the continuous moving wire. Thus, while Jaffee does not explicitly state that the wet web is dewatered on the moving screen, the process is inherent, or at least would have been obvious to one of ordinary skill in the art, from the descriptions and diagrams of the formers.

The publication year for the description and schematic for the Deltaformer™ is 2002. There is no publication date available for the reference describing the Hydroformer™. However, where a reference is cited as evidence of a fact, rather than evidence of "prior art," the reference may properly have a date subsequent to the date

Art Unit: 1731

of the instant invention. In re Langer, 503 F.2d 1380, 183 USPQ 288 (CCPA 1974); In re Wilson, 311 F.2d 266, 135 USPQ 442 (CCPA 1962). The Hydroformer™ is cited in prior art. It is the belief of the Examiner that the reference generally describes the operation of the machine and that no substantial change in the operation of the machine is evident, therefore the reference is considered valid for the description of the apparatus and its operation.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 and 8-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mirous (5518586) in view of Sage (6228281) and further in view of Jaffee et al (6432482).

Mirous discloses a wet-laid process for forming a glass fiber mat (col 3, line 64 to col 4, line 24; col 5, lines 39-41) comprising

- adding glass fiber bundles to an aqueous dispersant medium and forming an aqueous "white water" slurry of fibers under agitation that can contain conventional additives, such as a lubricant and a dispersant (col 3, line 64 to col 4, line 14). The dispersant contains hydroxyethylcellulose, which is an emulsifier (if evidence is needed, see Vanderhoff et al, 5106903, col 5, lines 16-24).

Art Unit: 1731

- agitating the slurry to cause separation of the fibers in to a uniform dispersion<sup>5</sup> of fibers (col 4, lines 8-11),
- removing the fibers from the water by collecting them on a screen to form a mat (col 4, lines 15-21),
- drying by means of vacuum (col 4, lines 18-21),
- applying a binder composition to the dewatered mat (col 4, lines 22-24),
- curing the binder composition at a temperature of at least 200 °C (col 5, lines 39-41).

Mirous teaches that the most widely used binder is urea-formaldehyde resin (col 2, lines 3-5). Example 1 discloses a urea-formaldehyde binder (col 5, line 58 to col 6, line 4). Mirous also teaches that surfactants are typically added to the white water to aid in dispersion of the glass fibers. Since emulsifiers are surfactants (see Tiesler et al, col 1, lines 54-56), the surfactant of Mirous can serve the purpose of an emulsifier in aiding dispersion of the glass fibers. The surfactant or the dispersant (hydroxyethylcellulose) disclosed by Mirous, when added to the slurry and the slurry agitated, will function as an emulsifier and cause the entrainment of air, or at least it would have been obvious to one of ordinary skill in the art to obtain the claimed entrainment of air, because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in

Art Unit: 1731

the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.

Mirous does not disclose that the individual fibers are collected and dried on an endless moving conveyor or that the binder application step occurs on an adjacent endless moving conveyer. Mirous further does not disclose the composition or properties of the lubricant. Mirous also does not disclose that the sized fibers have a loss on ignition between about 0.01% and about 0.75%.

Sage discloses treating glass fibers with a sizing composition comprising a cationic lubricant that can be a partially amidated polyalkylene imine such as a reaction product of C2 to C18 fatty acids with a polyethylene imine having a molecular weight from about 800 to about 50,000. The product has a residual amine value from about 200 to about 800 (abstract and col 4, lines 15-22). Sage also discloses that a suitable material is Emery 6760T, which is cited in the instant disclosure as having the required properties (col 4, lines 28-33). Sage further discloses that the amount of cationic lubricant is present in an amount from about 0.01% to about 0.1% by weight of the composition (col 4, lines 39-43). Sage teaches that the sizing composition helps prevent breakage of fibers during handling and reduces the fuzz on the surface of the fibers (col 1, lines 58-64; col 2, lines 10-13). Sage also teaches that emulsifiers are typically added to sizing compositions (col 2, lines 44-55), thus emulsifiers can also be present in the white water from the sizing composition.

Sage does not disclose that the individual fibers are collected and dried on an endless moving conveyor or that the binder application step occurs on an adjacent endless moving conveyor.

Jaffee et al discloses a conventional process for continuously forming multiple layer nonwoven glass fiber mats (col 3, lines 49) comprising

(a) forming and drying a mat on a permeable moving belt (inherently endless) (col 4, lines 5-19),

(b) transferring the dried mat to a second moving screen or belt (inherently endless) where a binding resin is applied (col 4, lines 20-24).

Jaffee depicts the process in Figure 1, where the drying portion of the apparatus is clearly located adjacent to the binding portion of the apparatus.

As discussed in the Response to Arguments above, Jaffee does not explicitly state that the wet web is dewatered on the moving screen. However, Jaffee et al discloses that preferred processes for the production of the mats are those known processes using mat forming machines like the Hydroformer™ or Deltaformer™ (col 4, lines 5-16). Dewatering of the wet on the moving screen of the machine is inherent from the descriptions and diagrams of the mat formers, or at least would have been obvious to one of ordinary skill in the art.

The art of Mirous, Sage, Jaffee et al and the instant invention is analogous as pertaining to making nonwoven glass fiber mats. It would have been obvious to one of ordinary skill in the art at the time of the invention to use adjacent endless belts to form, dry and apply binder to the glass fiber mats of Mirous et al in view of Sage and further in



Art Unit: 1731

view of Jaffee et al as a conventional process for making the mats. It would further have been obvious to one of ordinary skill in the art at the time of the invention to use the claimed sizing composition in the mat of Mirous et al in view of Sage to reduce the breakage of fibers and creation of fuzz on the fiber surface. The sized fibers disclosed by Sage have the claimed LOI, or at least it would have been obvious to one of ordinary skill in the art to obtain the claimed LOI, because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 1731

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

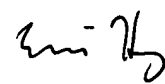
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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